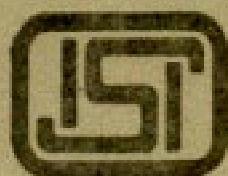


IS : 5689 - 1981

Indian Standard
SPECIFICATION FOR
ANKLE DERBY BOOTS
(*First Revision*)

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INDIAN STANDARDS INSTITUTION
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Indian Standard

SPECIFICATION FOR ANKLE DERBY BOOTS

(First Revision)

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Indian Standard
SPECIFICATION FOR
ANKLE DERBY BOOTS
(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 16 November 1981, after the draft finalized by the Footwear Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard was originally published in 1970. This revision has been taken up to cover defence requirements of riveted, stitched and screwed method of construction and cotton tape, back loop.

0.3 Ankle derby boots are generally worn by police and service officers. This standard covers two types of boots: one with plain front made by riveted, stitched and screwed method of construction and intended for use by defence personnel and the other with toe cap and made by welted method of construction intended for police and other similar departments.

0.4 This standard contains clauses **4.2, 9.1, 9.2, 9.5.1, 12.1** and **13.1** which call for agreement between the purchaser and the supplier.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements, methods of sampling and test for ankle derby boots. (*see also 0.3*).

*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 2050-1967* shall apply.

3. TYPES

3.1 This standard covers the following two types of ankle derby boots, depending upon the method of construction:

Type 1 — Boots with plain front and made by combined riveted, stitched and screwed method of construction, and

Type 2 — Boots with toe cap and made by welted method of construction.

3.2 General requirements for both the types are given in 4, 5, 6 and 7. Other detailed requirements for Type 1 and Type 2 are given in Section 1 and Section 2 respectively.

4. GENERAL REQUIREMENTS

4.1 The leather derby boots shall comply with the requirements of design, materials, manufacture and finish as given in Sections 1 and 2.

4.2 Fittings — The purchaser shall specify the fittings of the boots while placing the order. In case the fittings are not specified, the following percentage of each fitting shall be supplied:

<i>Fitting</i>	<i>Percent</i>
F	15
G	50
H	25
XH	10

5. MARKING

5.1 The type, size and fitting number of the boots shall be legibly stamped on the outer waist of the sole as well as on the waist of full sock. The manufacturer's name or recognized trade-mark, if any; together with the year of supply; may also be legibly stamped on the waist of sock.

*Glossary of footwear terms.

5.1.1 The boots may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI Marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. PACKING

6.1 The boots shall be suitably packed in pairs as agreed to between the purchaser and the supplier.

7. SAMPLING

7.1 The method of sampling, drawing representative samples of the boots and the criteria for conformity shall be as prescribed in IS : 2051-1976*.

SECTION 1 BOOTS, TYPE 1

8. SHAPE AND DESIGN

8.1 The boots shall conform to the shape and design illustrated in Fig. 1 by combined riveted, stitched and screwed method of construction.

9. MATERIALS

9.1 **Upper Leather** — Plain grain leather conforming to IS : 578-1971† of shade as agreed to between the purchaser and the supplier shall be used.

9.2 **Lining Leather** — For lining, Type 1 (combination tanned) or Type 2 (vegetable tanned) lining leather conforming to IS : 3840-1979‡ or as otherwise agreed to between the purchaser and the supplier shall be used.

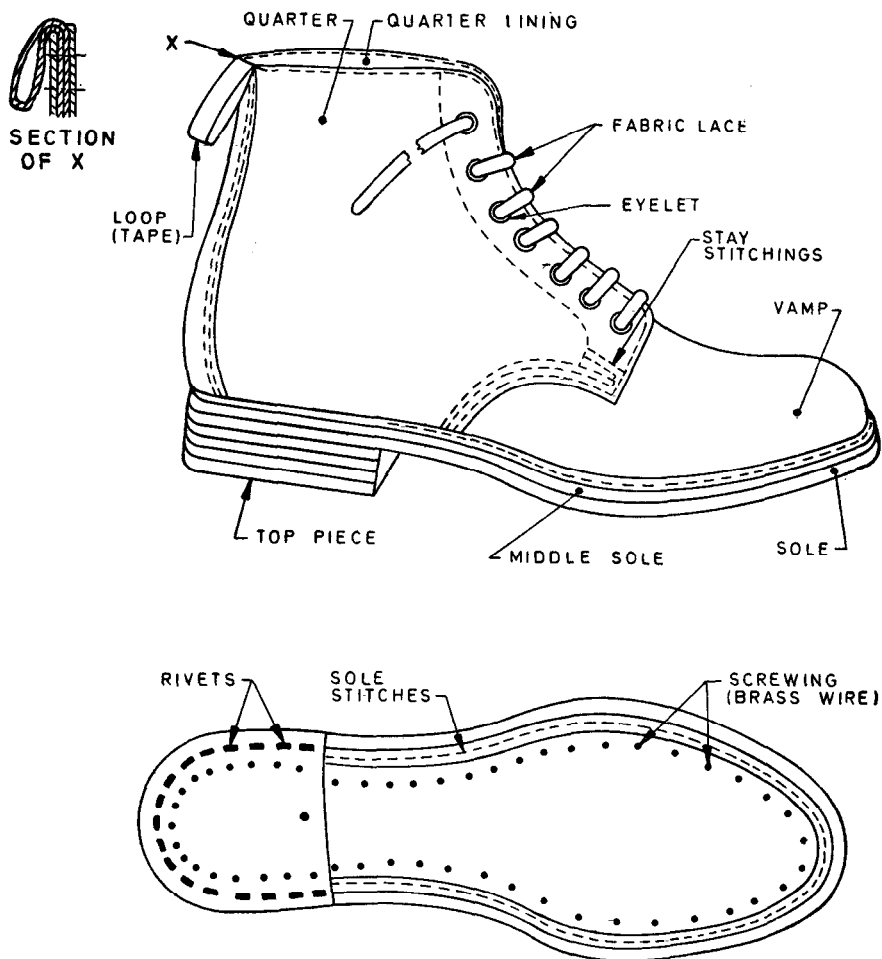
9.3 **Bottom Material** — For soles and heels, vegetable tanned compressed buffalo sole leather conforming to IS : 579 (Part I)-1973§ shall be used.

*Method for sampling of leather footwear (*first revision*).

†Specification of full-chrome upper leather (*second revision*).

‡Specification for lining leather (*first revision*).

§Specification for sole leather: Part I Vegetable tanned sole leather (*second revision*).



NOTE — This illustration is diagrammatic only and is not intended to illustrate all details of design.

FIG. 1 ANKLE DERBY BOOTS, TYPE 1 PLAIN FRONT

9.4 Bottom Filling — Bituminized felt, bonded cork or saw dust shall be used as the bottom filling material.

9.5 Threads

9.5.1 For Upper Closing — Cotton thread matching the colour of the upper leather and conforming to Variety No. 35 of IS : 1720-1978* shall be used.

NOTE — Silk or synthetic or linen thread of suitable quality may also be used subject to agreement between the purchaser and the supplier.

9.5.2 For Sole Stitching — Depending upon whether stitching is done by hand or by machine, the types of thread given below shall be used:

<i>Sl No.</i>	<i>Method of Stitching</i>	<i>Material (Linen)</i>	<i>Count Tex (Linen)</i>	<i>Construction (Ply)</i>	<i>Minimum Breaking Strength in kg on 50 cm Length with Rate of Traverse of Power Actuated Grips being 30 cm/min</i>
(1)	(2)	(3)	(4)	(5)	(6)
i) Stitching by machine:					
	a) Shuttle and welt	Linen	92 (or 18 s)	8	23
	b) Top	Linen	92 (or 18 s)	10	30
ii) Stitching by hand					
		Linen	92 (or 18 s)	8	23

9.6 Tape — 19 ± 1 mm width herring bone weave conforming to IS : 1895-1970† shall be used.

9.7 Toe Compound — A hard setting cement or gum compound.

9.8 Eyelets — Brass or aluminium eyelets, colour matching the shade of upper leather and of 7.5 mm size (collar dia) conforming to IS : 5041-1978‡ shall be used.

9.9 Lasting Tacks — Rust proofed mild steel lasting tacks of 12 ± 1 mm, 10 ± 1 mm and 9 ± 1 mm length shall be used.

*Specification for cotton sewing threads (second revision).

†Specification of cotton tape NEWAR, grey or dyed (first revision).

‡Specification for footwear and stationery eyelets (first revision).

9.10 Rivets — Spear-pointed brass rivets of 14 ± 1 mm, 16 ± 1 mm and 19 ± 1 mm length shall be used.

9.11 Shanks — Rust proofed steel, ribbed, 1.2 to 1.5 mm thick and not less than 12 mm width shall be used.

9.12 Screw Wire — Brass screw wire conforming to IS : 8606-1977* shall be used.

9.13 Heel Pins — Rust proofed iron, grooved or spiral, heel pins 32 ± 1 mm long shall be used.

9.14 Fabric Laces — The boots shall be provided with braided fabric laces conforming to designation L 100/23 of IS : 4778-1968†. Cotton lace, if coloured black, shall be free from sulphur dyes (*see* Appendix A).

9.15 Leather Components — Each leather component of the ankle derby boots shall comply with the requirements prescribed in Table 1.

10. MANUFACTURE

10.1 The boots shall be made on lasts conforming to IS : 5520-1969‡ (Model No. 9150).

10.2 Leather components of the boots shall be cut to the thickness, shape and design as required (*see* Fig. 1 and Table 1). The upper components shall be free from grain defects, flay cuts and shall be skived properly.

10.3 The upper shall be closed on lock stitch machine with threads (*see* 9.5.1), the number of stitches being 25 to 30 per decimetre. The back seam of quarter shall be taped by stitching a tape (*see* 9.6) which shall be folded in at the top to form a loop of about 5 cm. The back seam of quarters shall be further strengthened by stitching a 25 ± 1 mm wide leather strip with two rows of stitches. Full bellow tongue shall be joined to vamp with two rows of stitching. The vamp and quarter shall be fully lined. There shall be three rows of stitchings, 2 mm apart, on sides of quarters and the distance between two rows of stitching at the facing of the quarter shall not exceed 2 cm.

10.4 Seven eyelets shall be fitted at equal spacing in each quarter facing and clenched without distortion. The top eyelet shall be at a distance of 25 ± 1 mm from the top line of the quarter.

*Specification for brass screw wire for footwear.

†Specification for cotton laces for footwear.

‡Specification for wooden lasts for heavy-duty boots.

TABLE 1 THICKNESS REQUIREMENTS FOR COMPONENTS

(Clauses 9.15 and 10.2)

Sl No.	COMPONENT	MATERIAL AND RECOMMENDED PORTION	THICKNESS REQUIRE- MENT <i>Min</i>
(1)	(2)	(3)	(4)
i)	Full vamp (for Type 1)	Prime part of upper leather	1.2
ii)	Half vamp (for Type 2)	do	1.2
iii)	Toe-cap (for Type 2)	Shoulder of upper leather	0.8
iv)	Quarters	do	1.0
v)	Full bellows tongue and back strap	Remaining portion of upper leather	0.7
vi)	Vamp and quarter lining	Lining leather	1.0
vii)	Full socks	do	0.6
viii)	Insole (if welted)	Well struck shoulder or belly portion of sole leather	3.0
ix)	Insole (if riveted, stitched and screwed)	do	3.7
x)	Welt	do	2.5
xi)	Outer sole and sole piece	Prime part of sole leather	3.7
xii)	Middle sole (Type 1)	do	3.7
xiii)	Top piece	do	4.5
xiv)	Seat lift and split lifts	Shoulder or belly portion of sole leather	2.5
xv)	Stiffeners	do	2.1
xvi)	Toe puff	do	1.5
xvii)	Cotton loop	Tape cotton 19 mm black	—

10.5 All bottom components shall be properly prepared to uniform thickness. The insole shall be feathered and buffed on the grain side. The outer sole shall be open channelled. The heel shall consist of whole cut lifts, one two-piece lift and one top piece. The top piece shall be screwed with two rows of 19 ± 1 mm spear pointed brass rivets.

NOTE — The outer sole may be pieced under the heel, provided the joint is not less than 25 mm behind the breast of the heel; the piece sole shall be of the same quality.

10.6 A hard setting cement or gum compound shall be evenly applied on both sides of the stiffener and toe-puff. The boots shall be well lasted, so that the uppers get properly embedded to the last; 12 mm or 10 mm lasting tacks shall be used at toe and seat and 9 mm tacks at the remaining portion. After lasting, any excess upper material or wrinkles along the feather line shall be removed. The lasting edges of stiffener shall come under the grip of the lasting tacks and a clear lasting allowance of about 13 mm shall be provided all round.

10.7 The steel shank shall be fitted to the waist of the insole and the gap on the insole shall be filled with bottom filling materials. The middle sole shall be rivetted. Rivets of 14 mm length shall be used at the remaining portion using 11 to 14 rivets per decimetre.

10.8 Leather outer sole shall be securely stitched aloft in an open channel with the middle sole by lock stitch method with linen threads (see 9.5.2). The number of stitches shall be 18 to 22 per decimetre. The outer sole shall be screwed all round 24 to 27 mm apart with brass screw wire. Screws shall penetrate through the outer sole, middle sole, upper and the insole without protruding. The built-in heel shall be attached from the inside with 14 heel pins.

11. FINISH

11.1 The sole and heel edges shall be neatly trimmed, screwed and finished to match the colour of the boot. The edge setting shall be uniformly done using matching colour heel ball. Full socks shall be stuck down neatly on the insoles.

11.2 The upper shall be finished bright by polishing. Each pair of boots shall be provided with a pair of fabric laces (see 9.14).

11.3 The height of the leg when lasted shall be 150 ± 2 mm (both odds of a pair shall be equal in height) for size 8 and shall increase or decrease by 3 mm from size to size. The height of the heel shall be 30 ± 2 mm for all sizes.

SECTION 2 BOOTS, TYPE 2

12. SHAPE AND DESIGN

12.1 The boots shall be made with short vamp and toe cap, and conform to the design and shape as shown in Fig. 2. The boot may also have plain front, if specially required by the purchaser (see Fig. 1).

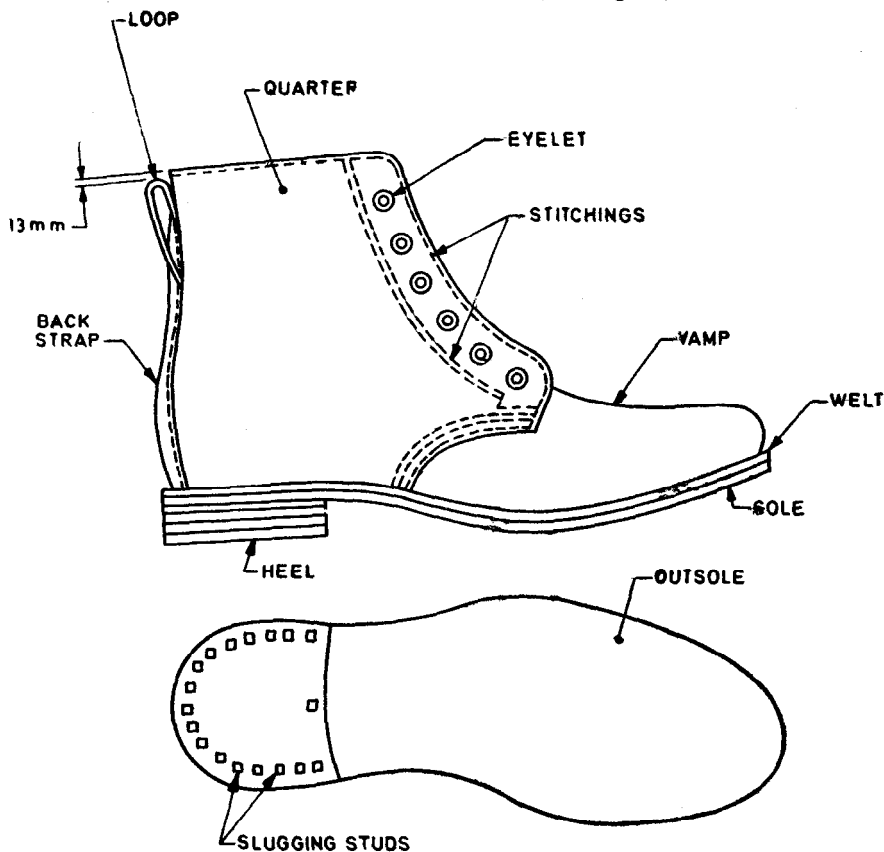


FIG. 2 ANKLE DERBY BOOTS, TYPE 2

13. MATERIALS

13.1 Upper Leather — Plain grain leather conforming to IS : 578-1971*, of shade as agreed to between the purchaser and the supplier shall be used.

*Specification for full chrome upper leather (second revision).

Leather conforming to IS : 2961-1973* may also be used, if agreed to between the purchaser and the supplier.

13.2 Lining Leather — For lining, Type 1 (combination tanned) or Type 2 (vegetable tanned) lining leather conforming to IS : 3840-1979† shall be used.

13.3 Bottom Material — For soles and heels, vegetable tanned compressed buffalo sole leather conforming to IS : 579 (Part I)-1973‡ shall be used.

13.4 Bottom Filling — Bituminized felt, bonded cork or saw dust shall be used as the bottom filling material.

13.5 Threads

13.5.1 For Upper Closing — Cotton thread matching the colour of the upper leather and conforming to Variety No. 35 of IS : 1720-1978§ shall be used.

NOTE — Silk or synthetic or linen thread of suitable quality may also be used subject to agreement between the purchaser and the supplier.

13.5.2 For Sole Stitching — Depending upon whether stitching is done by hand or by machine, the types of thread given below shall be used:

<i>Sl No.</i>	<i>Method of Stitching</i>	<i>Material</i>	<i>Count Tex Linen</i>	<i>Construc- tion (ply)</i>	<i>Minimum Breaking Strength in kg on 50 cm Length with Rate of Traverse of Power Actuated Grips being 30 cm/min</i>
(1)	(2)	(3)	(4)	(5)	(6)
i)	Stitching by machine:				
	a) Shuttle and welt	Linen	92 (or 18 s)	8	23
	b) Top	Linen	92 (or 18 s)	10	30
ii)	Stitching by hand	Linen	92 (or 18 s)	8	23

*Specification for chrome retan upper leather (*first revision*).

†Specification for lining leather (*first revision*).

‡Specification for sole leather : Part I Vegetable tanned sole leather (*second revision*).

§Specification for cotton sewing thread (*second revision*).

13.6 Tape — 12 ± 2.5
— 0.0 mm width herring bone weave conforming to Variety No. 8 of IS : 1895-1970* shall be used.

13.7 Toe Compound — A hard setting cement or gum compound.

13.8 Eyelets — Brass or aluminium eyelets, colour matching the shade of upper leather and of 7.5 mm size (collar dia) conforming to IS : 5041-1978† shall be used.

13.9 Lasting Tacks — Rust proofed mild steel lasting tacks of 12 ± 1 mm, 10 ± 1 mm and 9 ± 1 mm length shall be used.

13.10 Rivets — Spear pointed brass rivets of 14 ± 1 mm, 16 ± 1 mm and 19 ± 1 mm length shall be used.

13.11 Shanks — Rust proofed steel, ribbed, 1.2 to 1.5 mm thick and not less than 12 mm width shall be used.

13.12 Heel Pins — Rust proofed iron, grooved or spiral heel pins 32 ± 1 mm long shall be used.

13.13 Fabric Laces — The boots shall be provided with braided fabric laces conforming to designation L 100/23 of IS : 4778-1968‡. Cotton lace if coloured black shall be free from sulphur dyes (see Appendix A).

13.14 Leather Components — Each leather component of the ankle derby boots shall comply with the requirements prescribed in Table 1.

14. MANUFACTURE

14.1 The boots shall be made on lasts conforming to IS : 5520-1969§ (Model No. 9150) by the welted method of construction.

14.2 Leather components of the boots shall be cut to the thickness, shape and design as required (see Fig. 2 and Table 1). The upper components shall be free from grain defects, flay cuts and shall be skived properly.

14.3 The upper shall be closed on back stitch machine with threads (see 13.5), the number of stitches being 25 to 30 per decimetre. The back seam of the quarters shall be tapped and further strengthened by means of 25 ± 1 mm leather strip which shall be turned over to within 13 mm at the top to form a loop. Full bellow tongue shall be joined to vamp

*Specification for cotton tape *NEWAR*, grey or dyed (first revision).

†Specification for footwear and stationery eyelets (first revision).

‡Specification for cotton laces for footwear.

§Specification for wooden lasts for heavy-duty boots.

with two rows of stitches. The vamp and quarters shall be fully lined. There shall be three rows of stitches 2 mm apart on quarter and sides and three rows, 2 mm apart, at the cap. Toe puff shall also be stitched along with the cap. The distance between two rows of stitches at the quarter facing shall not exceed 2 cm.

14.4 Seven eyelets shall be fitted at equal spacing in each quarter facing and clenched without distortion. The top eyelet shall be at a distance of 25 ± 1 mm from the top line of the quarter.

14.5 All bottom components shall be properly prepared to uniform thickness. The insole shall be feathered and buffed on the grain side. The outer sole shall be open channelled. The heel shall consist of whole cut lifts, one two-piece lift and one top piece. The top piece shall be secured with two rows of 19 ± 1 mm spear pointed brass rivets.

NOTE — The outer sole may be pieced under the heel, provided the joint is not less than 25 mm behind the breast of the heel. The piece sole shall be of the same quality.

14.6 Hard setting cement or gum compound shall be evenly applied on both sides of the stiffener and toe puff. The boot shall be well lasted with 25 mm long nails which shall be removed during welt sewing. Welt shall be sewn by chain stitch with machine or hand using thread as indicated in **13.5.2**. The steel shank shall be fitted to the waist of the insole and the gap shall be filled with bottom filling material. After welt beating, the sole shall be lock stitched through the open channel. The built up heel shall then be attached from inside with 14 heel pins.

15. FINISH

15.1 The sole and heel edges shall be neatly trimmed, scoured and finished to match the colour of the boot. The edge setting shall be uniformly done by using matching colour heel ball. Full socks shall be stuck down neatly in the insoles.

15.2 The upper shall be finished bright by polishing. Each pair of boots shall be provided with a pair of fabric laces (*see 13.13*).

15.3 The height of the leg, when lasted, shall be 150 ± 2 mm (both odds of a pair shall be equal in height) for size 8 and shall increase or decrease by 3 mm from size to size. The height of the heel shall be 30 ± 2 mm for all sizes.

A P P E N D I X A
(*Clauses 9.14 and 13.13*)

**METHOD FOR DETECTION OF SULPHUR DYES IN
BLACK COLOURED LACES**

A-1. PROCEDURE

A-1.1 Boil the laces in alkaline hydrosulphide solution for 1 min. If the shade is reduced to pale brown or yellow colour and on oxidation is restored to the original colour, sulphur dyes shall be suspected to be present.

A-1.2 For confirmation, boil the laces in acid stannous chloride solution in a test tube covered with a piece of filter paper moistened with lead acetate. A blackish/brown stain with metallic lustre confirms the presence of sulphur dyes.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	$1 \text{ N} = 1 \text{ kg.m/s}^2$
Energy	joule	J	$1 \text{ J} = 1 \text{ N.m}$
Power	watt	W	$1 \text{ W} = 1 \text{ J/s}$
Flux	weber	Wb	$1 \text{ Wb} = 1 \text{ V.s}$
Flux density	tesla	T	$1 \text{ T} = 1 \text{ Wb/m}^2$
Frequency	hertz	Hz	$1 \text{ Hz} = 1 \text{ c/s (s}^{-1}\text{)}$
Electric conductance	siemens	S	$1 \text{ S} = 1 \text{ A/V}$
Electromotive force	volt	V	$1 \text{ V} = 1 \text{ W/A}$
Pressure, stress	pascal	Pa	$1 \text{ Pa} = 1 \text{ N/m}^2$

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INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones : 26 60 21, 27 01 31

Telegrams : Manaksanstha

Regional Offices:

Western : Novelty Chambers, Grant Road
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